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DOMINION OF CANADA

DEPARTMENT OF THE INTERIOR

Hon. Thomas G. Murphy, Minister — H. H. Rowatt, Deputy Minister
F. H. Peters, Surveyor General and Director, Topographical Survey

ANNUAL REPORT

OF THE

TOPOGRAPHICAL SURVEY

FOR THE

FISCAL YEAR ENDED MARCH 31, 1930

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REPORT OF THE

TOPOGRAPHICAL SURVEY, DEPARTMENT OF THE INTERIOR

FOR THE FISCAL YEAR ENDED MARCH 31, 1930

GENERAL STATEMENT

The Topographical Survey of the Department of the Interior was organized just two years after Confederation. For many years its principal task related to the survey and subdivision of the Canadian Northwest. This work, laid down as it was in an orderly and systematic manner, has provided an admirable basis upon which the later topographic mapping over the country may be carried out.

In Canada's development at the present time, national problems have to be faced, such as those relating to the utilization of our water-powers and forest resources, the extension of railways into our northern areas and the further improvement of our great transportation waterways. Other problems, similarly relating to development, are before the provinces, the counties, the cities, the towns, and the municipalities, all in their respective spheres. In the study of such problems maps are a necessity. The maps available for such purposes may be complete or incomplete, but the most satisfactory type is what is known as the topographic map.

The topographic map records all the topographic information available for the scale employed. It has many uses but one of its most important uses is that of a base upon which problems affecting human activities may be studied and investigated, and plans made for their solution.

The production of such maps by most of the foremost countries of the world has long been recognized as a major governmental function. Considerations of economy and of the standardization of the product make this imperative. The conduct of such work requires special equipment and specially trained personnel, most uneconomical to duplicate. For a country of the size of Canada topographic mapping is a national undertaking of great importance. In this country, with such a great deal of development taking place in the regions, mostly forest covered and filled with a multiplicity of water areas, that lie back from settlement, the work has, up until recently at least, presented special difficulties.

Toward the solution of these difficulties, the new science of aerial photography has been called upon and has been found to fit in well with Canada's needs. Without it, the mapping of such regions would be a most laborious undertaking. Methods devised by the Topographical Survey have been brought into use and are meeting the necessities very effectively.

The actual taking of the aerial photographs, which provide the mapping detail, is performed by and through the co-operation of the Royal Canadian Air Force of the Department of National Defence. This co-operation is mutually advantageous to the two organizations concerned and through it effective advancement has been made in the furthering of Canada's national mapping program. During the year, for instance, due to this mutually advantageous arrangement, an area was photographed for mapping purposes greater than that of England and Wales combined.

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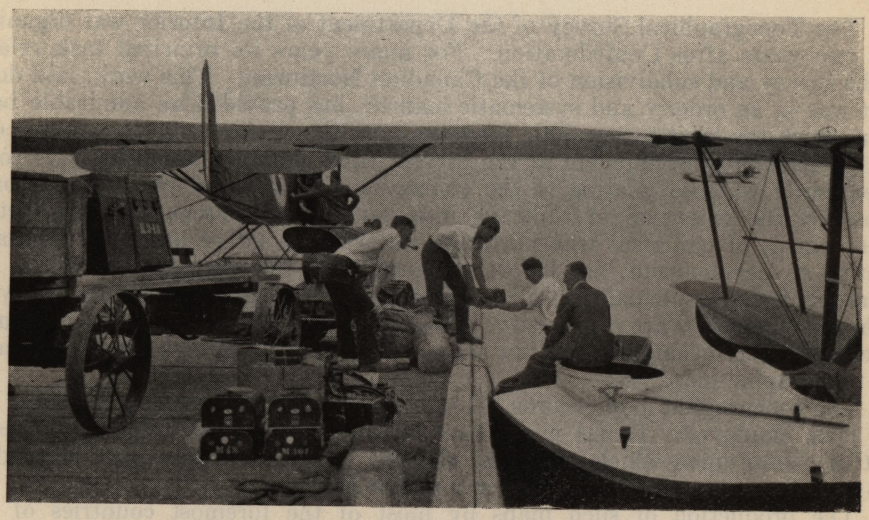
The federal work of aerial mapping, except in regard to certain aerial survey operations carried out for its own use by the Department of National Defence, is concentrated in the Topographical Survey. The Topographical Survey acts in an advisory and consulting capacity and is the central authority on all aerial photography and aerial surveying operations for the Dominion Government. It is also the organization responsible for the indexing, filing, and plotting of aerial photographs so that they may be available for other services. At the end of the fiscal year 1929-1930 there were contained in this Central Index 343,700 aerial photographs which in addition to their primary purpose in connection with topographic mapping, are valuable records for associated studies such as geology; water-power projects; highway, railway and transmission line location; etc.



STARTING OUT FOR THE SEASON

The accompanying view shows one of the newer phases of the old epic of starting out in the spring for the summer survey's operations, the operations in this case being the taking of oblique aerial photographs by the Royal Canadian Air Force in co-operation with the Topographical Survey. Brought down on to the dock at the Royal Canadian Air Force substation at Ladder Lake, Saskatchewan, is the camera equipment to be used for the season.

On the right of the picture is seen the forward portion of one of the two flying boats of the Photographic Detachment, showing the front cockpit from which the oblique photographs are taken.

Four loaded magazines and camera spares for the aerial camera are in the foreground, while another magazine is being handed into the skiff to be taken out to the sister-ship at anchor in the background.

A monoplane at the left centre, detailed to act as "transportation aircraft" to the detachment, is ready to be loaded with the heavier, bulkier portion of the camp equipment.

In the production of topographic maps by the use of aerial photographs, certain ground surveys are required. Very important among these ground surveys are those which are in the nature of control surveys and which serve to fix the positions of control points as depicted upon the photographs. Other ground surveys include the field interpretation of the features appearing upon the photographs and their transfer to the line maps. Also in certain methods of mapping, the aerial photographs are used in conjunction with the regular ground methods as considerations of expediency and economy make it advisable.

The field operations during the year extended into all the provinces, into the Yukon territory and into the Northwest Territories. In the prosecution of

these surveys, eighteen separate parties were employed for the full season and, in addition, three surveys engineers acted throughout the season as representatives of the Topographical Survey and technical advisers with aircraft of the Royal Canadian Air Force engaged in taking photographs for aerial mapping operations. Several small survey operations, the necessity for which developed during the season, were carried out by other members of the staff. In gathering the topographic data and in the work generally, co-operation was maintained with the various provincial surveying and mapping organizations.

The area covered during the year by newly issued topographical map sheets is 106,302 square miles. Of this amount, 71,898 square miles are covered by map sheets of the National Topographic series—standard, provisional and exploratory editions—and the remainder by sheets of the Sectional Map series and in a few cases by other map sheets designed to meet special needs.

RESUME OF OPERATIONS FOR THE YEAR

Aerial Surveys.—Under the heading of aerial surveys, the following work was carried on: the issuing of the necessary technical instructions to the Royal Canadian Air Force for 58 aerial photographic operations; assisting the photographic detachments on such operations in outlying districts by providing surveys engineers to act in an advisory capacity to ensure that the operations are carried out in accordance with the instructions issued; compiling topographic maps from both vertical and oblique aerial photographs; indexing, recording and filing aerial photographs; and selecting and supplying copies of same as requested.

The aerial photographic surveys made during the year have been applied by the Department to many purposes such as topographical mapping; the mapping of timber types, and mapping in connection with forest protection; the investigation, and development of the forested and mineralized areas of northern Canada; the location of transmission lines; reconnaissance for railway location; irrigation surveys; town planning; road construction; investigation of water-power development and water storage; development of tourist traffic; and administrative, educational and illustrative purposes.

The areas covered by aerial photographic operations during the year, exclusive of those connected with operations for experimental or illustrative purposes, comprised 74,255 square miles and were distributed between vertical and oblique photography as follows:—

Province	Vertical Photography	Oblique Photography
	sq. mi.	sq. mi.
Nova Scotia	970	—
New Brunswick	1,125	—
Quebec	8,860	—
Ontario	4,780	19,825
Manitoba	4,265	14,700
Saskatchewan	355	13,500
British Columbia	5,875	—
	26,230	48,025

For the carrying on of this work there were eight photographic flights of two aeroplanes each operating throughout Canada, and over 98,500 aerial photographs resulted, one index copy of each of these being placed in the national index maintained by the Topographical Survey. In addition to this 90,500 additional prints were received for various purposes such as for surveyors' uses

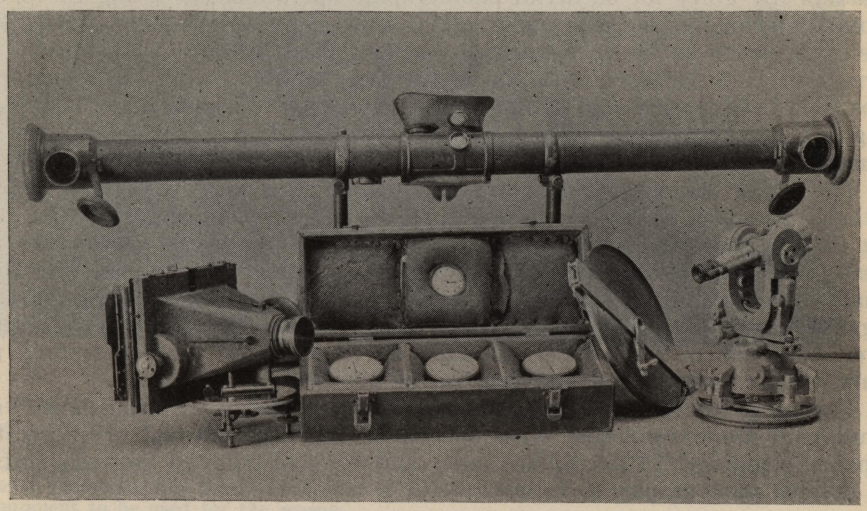
in the field, constructing mosaic maps, transmission to other federal services, or for distribution on a repayment basis to Provincial Government offices, city engineers, mining and lumbering corporations, municipalities, etc.

From oblique photographs 10 four-mile sheets of the National Topographic series and one special map are being compiled for publication; and 9 sheets have been compiled and published during the year.

From vertical photographs one Sectional Series sheet on the three-mile scale and one National Topographic Series sheet on the two-mile scale have been compiled and published during the year; while four sheets on the one-mile scale and 24 sheets on the two-mile scale of the latter series are being compiled for publication, together with a special map of the Ottawa-Kingston South area.

Mosaics of some fifteen different localities were also constructed from vertical aerial photographs.

Topographical and Photo-topographical Surveys.—Ground surveys for the obtaining of topographical detail for mapping purposes extended into all the provinces of Canada except Alberta and Saskatchewan and included plane-table work, the interpretation of aerial photographs on the ground, and the use of photo-topographic and other methods of survey.



SOME INSTRUMENTS USED IN GROUND MAPPING OPERATIONS

The long instrument in the background is a rangefinder used for measuring distances. At the left in the foreground is the photo-topographical camera for mapping areas of abrupt and large changes of relief such as in the Rocky Mountains. In the centre is a case containing three barometers and a watch. The case is specially padded to prevent jarring of the delicate mechanism of the barometers. The barometers are used in obtaining elevations. At the right is a modern transit of a compact design which gives much greater accuracy in the measurement of angles than older designs, with greatly reduced weight. Alongside the transit is a surveyor's tape which in itself provides a considerable contrast to the cumbersome link chain of a generation ago.

The methods of survey employed were determined by the local topography and the requirements of the scale of production. Of the total area, 400 square miles are intended to be published on the one-mile scale, 8,290 square miles on the two-mile scale and the remainder, some 810 square miles, primarily on special scales. The latter included the survey of 700 square miles in the Roseau River basin, Manitoba, adjoining the international boundary as a necessary preliminary to the solution of the flood menace in that district; and the survey at the request of the Department of Marine and Fisheries of Malpeque bay, Prince Edward Island, for the purpose of planning an extensive system of leases for oyster cultivation.

Control and Exploration Surveys.—Control surveys as a basis for topographical mapping were carried on in all the provinces with the exception of Manitoba and Alberta. The control established during the year comprised 892 miles of precise chained traverse, 935 miles of stadia traverse, the placing of 322 permanent monuments to perpetuate points of known position to serve as a base for future surveys, the establishment of geographic positions by astronomical observations at 14 different points, the running of 382 miles of stadia levels and 1,928 miles of spirit levels, and some minor triangulation. In the carrying on of this work, as in the past, every effort has been made to co-operate with the Survey departments of the Provincial Governments, with mutual benefit to all concerned.

Explorations and investigations of an exploratory nature were carried on in the region of the west coast of Hudson bay in the Northwest Territories.

STORING AERIAL PHOTOGRAPHIC EQUIPMENT IN THE FIELD

When aerial photographic mapping operations as carried on by the Royal Canadian Air Force in co-operation with the Topographical Survey, are being undertaken over localities considerably removed from a permanent air base, great care must be taken to keep the super-sensitized panchromatic film as cool as possible and away from the direct rays of the sun although still with access to the air.

In the lower compartment of the case seen in the accompanying photograph are two aerial cameras each complete with a loaded magazine, while in the upper shelf three more loaded magazines are visible. Each magazine contains film for one hundred exposures. At the foot of the case a "cellar" has been dug in which is stored a further stock of photographic film.

Legal Surveys.—One party was engaged on surveys required in the Northwest Territories, one in the Yukon Territory (this work being performed under contract), one on Indian reserves in northern Manitoba and Saskatchewan, two on subdivision surveys in the Peace River district, and two on miscellaneous surveys in Alberta, Saskatchewan and Manitoba. In addition, small miscellaneous legal surveys requiring short periods of time only, were carried on in other parts of Canada.

Interprovincial Boundary Surveys.—Work was commenced during the year on the extension of the Manitoba-Ontario boundary from the terminal point of the existing meridian boundary northeasterly to Island lake. A trial line was laid out over this 87 miles of virgin territory during the season. This survey

was carried out by a Commission, the commissioners appointed by the several governments concerned being G. A. Warrington, Manitoba Land Surveyor, for Manitoba; L. V. Rorke, Surveyor General, for Ontario; and F. H. Peters, Surveyor General of Dominion Lands, for Canada. The work was performed under the technical direction of the Topographical Survey.

Land Classification Surveys.—Reconnaissance examination of vacant lands relative to their agricultural possibilities and having for their immediate object the determination of the advisability or otherwise of subdividing for settlement previously unsubdivided lands was carried on in the northern parts of Saskatchewan and Alberta. During the year an aggregate of 517,760 acres were so examined, 64,000 acres being in Saskatchewan and 453,760 acres in Alberta.

Magnetic Declination Surveys.—The work of measuring the true direction, or declination, of the magnetic needle, begun by the Survey in 1880 in conjunction with its other work, and carried on at very little expense therewith, was continued. During the year more than 1,600 such measurements were made, bringing the total number to date up to 26,000. The work was carried on in close co-operation with the Meteorological Service of Canada, the Dominion Observatory, the Ontario Department of Surveys, the North West Territories and Yukon Branch of the Department of the Interior, and various provincial governments and surveyors in order to utilize to the full the results of all work done.

The resulting information is published in the form of declination charts on the map sheets of the National Topographic and the Sectional Map series, in order that it may be shown in the most readily accessible and convenient form for compass users; and every five years it is published in the form of a magnetic declination chart of Canada.

Physical Testing Laboratory.—As in former years, the Physical Testing Laboratory was employed in such operations as the verification of precision length measures, thermometers, hydrometers, telescopes, aneroid barometers, aeronautical equipment, surveying instruments, and other instruments, the major part of this work being for other departments of the Government service and the public. The existence of a standardizing laboratory in Canada fulfils a need as, otherwise, such operations would have to be performed outside of the Dominion. Care is exercised to keep the equipment and methods up to date and, in most directions, the practice of the well-known national standardizing laboratories in England and elsewhere is followed.

While recently in Europe the Supervisor of the Physical Testing Laboratory took advantage of the opportunity to visit the National Physical Laboratory (England), the Bureau International des Poids et Mesures and the Conservatoire des Arts et Metiers (France), the Phsysikalisch-technische Reichsanstaldt (Germany), as well as military and air-force laboratories in England, and various European works engaged in the manufacture of scientific instruments.

At the same time the two one-metre standard rules of the laboratory (Nos. 224 and 306) were taken to Sèvres and compared with the international standard, No. 26. A new and improved length comparator has been installed at the International Bureau since the last verification of the rules, in 1924, and the tests were made by means of this apparatus.

The nickel one-metre standard, No. 306, of the laboratory has been adopted by Order in Council as the legal reference standard for the International metre in Canada in accordance with the provisions of the Weights and Measures Act. Formerly there was no legal Canadian reference standard for the International metre, the old metric standard in possession of the Department of Trade and Commerce having been made before the advent of the International metre, and certified in terms of the older "Metre des Archives." Rule No. 306 is in every way fitted to be the legal standard, in the absence of a platinum-iridium

standard which would now be very costly. No. 306 has clear, fine defining lines and has been compared with no less than four of the platinum-iridium metre rules graduated and distributed by the International Committee of Weights and Measures. Of these the most important were three distinct comparisons with No. 26 (in 1921, 1924, and 1929) and one with No. 16 (in 1928). Metre No. 26 is the international reference standard of the Bureau International des Poids et Mesures and No. 16 is the legal primary standard of length for the United States.

TAKING AZIMUTH OBSERVATIONS ON
PHOTO-TOPOGRAPHICAL SURVEYS IN JASPER PARK

This view depicts a light mountain transit set up preparatory to taking a series of azimuth observations in connection with triangulation control surveys for photo-topographical mapping. The azimuth observations are made at frequent intervals to establish the accuracy of the system.

In the view above the selection of the point of observation was made on account of its advantageous position with respect to the surrounding triangulation stations. These latter stations are located on the summits of neighbouring peaks which are intervisible with the observation point, the latter being located in the valley of the Smoky river.

Note that the transit is set upon wooden posts driven into the ground and is weighted down by a number of small rocks held in a cloth support attached to the tripod legs, the whole arrangement being designed to prevent vibration, first, from the observer stepping around the instrument, and secondly, from the effects of the wind. At the eye-piece end of the instrument the long diagonal allows for the pointing of the telescope at a high altitude.

The new Dominion Standard Metre is normally retained with the other Dominion standards, in the custody of the Department of Trade and Commerce, being only removed to the laboratory when required for standardizing operations.

A recommendation was made to the International Committee of Weights and Measures that the definition of the International metre be amended to include a statement regarding the interpretation of the defining lines, in view of the specified interpretation of the lines of the Dominion standard yard, contained in the Weights and Measures Act, and the different practice followed by most standard laboratories. This recommendation has been officially supported by the Bureau of Standards.

Recommendations of this nature are first considered by the International Committee and, if concurred in by the committee, are submitted for adoption by the General Conference of Weights and Measures, consisting of delegates from all countries subscribing to the Metric Convention.

A special investigation was conducted to determine the refractive indices of ethyl and methyl alcohol solutions in the neighbourhood of 0·94 specific gravity in the range 15° to 22° C. A dipping type refractometer was employed and great care was exercised to obtain accurate temperature control and measurement as well as precise refractometer readings. Some difficulty was experienced at first in reducing the sources of error to negligible proportions, but when this was done very consistent results were obtained for the individual samples. Systematic differences found, however, between the refractive indices of different samples would suggest that the refractive index of an alcohol solution of given specific gravity may not be a constant. The discrepancies were not large enough to seriously affect observations made under ordinary working conditions. The investigation was made on behalf of the Department of National Revenue, which intends to utilize the results in the analysis of alcohol mixtures.

Some of the most important work of the laboratory may be summarized as follows:—

Examining, calibrating and adjusting 65 surveying transits, 53 levels, as well as a number of alidades, level vials and surveying cameras.

Verifying 503 hydrometers.

Standardizing 2,749 clinical and other thermometers.

Testing 109 new " D.L.S. Special " surveying aneroid barometers.

In addition, a considerable amount of special investigational work was undertaken looking forward to the improvement of the apparatus used and methods employed.

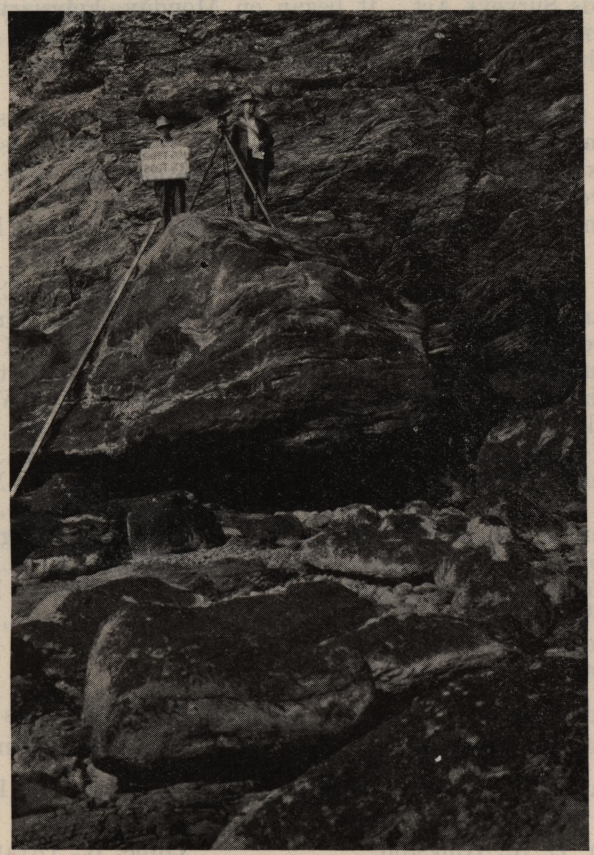
Registration, Records and Distribution.—During the year 513 books of field notes, 525 plans of survey, and 1,403 miscellaneous returns of survey were received; 339 field books and 613 plans were placed on official record, thus bringing the total number on record to 20,813 books and 37,075 plans. There were distributed 13,360 copies of official plans, 68,819 maps, and 6,026 other publications. In the distribution of these 13,360 requests were dealt with.

Map Publication.—A list of the map sheets published by the Survey during the fiscal year and of those in hand on March 31, 1930, is given in Appendices II and III. With regard to the construction of relief maps of important urban centres or of areas of special interest five original models were made.

GEOGRAPHIC BOARD OF CANADA

There are four representatives of the Department of the Interior on the Geographic Board of Canada, while the secretary is also a member of the department. The board was created by Order in Council of 1897. This Order in Council directs that all questions concerning geographic names in the Dominion arising in the various departments of the public service shall be referred to the board, and that all departments shall accept and use in their publications the names and orthography adopted by the board. Since 1899, the provinces have had representation on the board. The present membership includes the chairman, an executive committee of three, a number of members and provincial representatives.

The chairman is J. D. Craig, B.A., B.Sc., Director General of Surveys, Department of the Interior, and International Boundary Commissioner. The executive committee consists of W. H. Boyd, Chief Topographical Engineer, Geological Survey, Department of Mines; F. H. Peters, M.E.I.C., M.Am. Soc. C.E., Surveyor General, Department of the Interior; and J. E. Chalifour, Chief Geographer, Department of the Interior. The secretary is R. Douglas, M.A., a member of the staff of the Department of the Interior.



SURVEYING ON THE ATLANTIC COAST

The surveyors are engaged in making topographical maps of the Bay of Fundy coast in New Brunswick. A permanent bronze marker has been placed in the rock here, the position of which the surveys engineer is determining by triangulation.

During the year C. O. Senecal, who resigned as representative of the Geological Survey on the list of members after thirty years' membership, was replaced by A. Dickison, Chief of the Drafting and Reproducing Division of that Survey. Mr. Senecal's services, however, were retained as member emeritus. The deaths occurred of Dr. A. H. MacKay, representative member for Nova Scotia since 1900 and of Mr. William Fleet Robertson, British Columbia representative from 1900 to 1924.

During the year a pamphlet was prepared by the secretary embodying the principal place-names of Manitoba with their origin and meaning. The pamphlet is based on the records of the board, and is now almost ready for the press.

BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS

The Board of Examiners for Dominion Land Surveyors held two meetings during the year.

The first was a special meeting lasting from Monday, April 29, 1929, to Saturday, June 1, 1929 (inclusive), during which examinations were held at Ottawa, Montreal and Winnipeg.

The second was the regular annual meeting called for by section 9 of the Dominion Lands Surveys Act. It began on Monday, February 10, 1930, and lasted until Friday, March 14, 1930 (inclusive). During this meeting, examinations were held at Ottawa, Sackville, Kingston, Winnipeg, Saskatoon and Edmonton.

The total number of candidates who presented themselves at the examination was one hundred and forty-four. Of these, eighty-seven tried the Preliminary Examination, six the Final Examination, and fifty-one the examination for Levellers.

Twenty-nine candidates were successful at the Preliminary Examination as follows:—

Adair, J. E., Saskatoon.
Bertrand, R., Montreal.
Boucher, J. A., Ottawa.
Bureau, R., Montreal.
Campbell, J. M., Winnipeg.
Dubesky, W. J., Winnipeg.
Gavel, V. H., Sackville.
Hemond, A., Montreal.
Hood, G. L., Winnipeg.
Kachur, W. A., Winnipeg.
Klempner, H., Winnipeg.
Laviolette, J. P., Montreal.
Lea, W. C., Sackville.
MacIlquham, J. O., Ottawa.
Mathieu, O., Montreal.
McClary, A. E., Edmonton.
Nix, C. E., Edmonton.
Payne, L. F., Ottawa.
Reed, G., Montreal.
Scott, L. G., Winnipeg.
Thomas, G. B., Kingston.
Thomas, G. H., Ottawa.
Tremblay, C., Montreal.
Turnbull, L. G., Sackville.
White, J., Kingston.
Williams, L. C., Ottawa.
Wilson, G. E., Kingston.
Winters, R. H., Sackville.
Wrinch, A. E., Kingston.

Two candidates were successful at the Final Examination as follows:—

Hanson, R. E., Ottawa.
Gauer, Ed., Winnipeg.

Twenty-seven candidates were successful at the Levellers' Examination as follows:—

Barton, E. A., Kingston.
Brady, T., Ottawa.
Brown, O., Ottawa.
Campbell, W. G., Winnipeg.
Comfort, I. S., Edmonton.
Dubé, R., Ottawa.
Fafard, A., Ottawa.
Fraser, N. H., Edmonton.
Hayes, H. R., Edmonton.
Hayward, W., Winnipeg.

Hoey, A. C., Ottawa.
Hughes, R. P., Ottawa.
Jack, D., Kingston.
Keller, H., Ottawa.
Kent, W. L., Edmonton.
Laird, D. W., Winnipeg.
Lanthier, R., Ottawa.
Legate, D. H., Ottawa.
Lonergan, G. M., Ottawa.
McClintock, W. N., Edmonton
Robertson, G. G. D., Edmonton
Rombough, M., Kingston.
Stidwill, G. B. M., Kingston.
Tollington, G. C., Edmonton.
Williams, D. G., Edmonton.
Wortman, H. B., Edmonton.
Wright, E. H., Ottawa.

The time of the board during the meetings was largely taken up with the reading and valuation of the candidates' answer papers. Complete sets of question papers to be used at the following examinations were also prepared.

Three commissions were issued to candidates who had passed the Final Examinations and had furnished oaths of office and allegiance and bonds for the sum of one thousand dollars as required by section 25 of the Dominion Lands Surveys Act.

Fifteen certificates of Preliminary Examination were issued to successful candidates who had complied with the requirements of the law.

Nine certificates as Levellers were issued to candidates who had successfully passed the examination.

Five new standard measures of length were issued during the year.

APPENDIX I

SCHEDULE OF SURVEYORS EMPLOYED AND WORK EXECUTED BY THEM 1929-1930

BENNETT, G. A.—The completion of plane-table topography of the Moncton two-mile sheet, No. 21-I/S.E., of the National Topographic series; laying down control and making the field interpretation from aerial photographs of the topography of the Chipman two-mile sheet, No. 21-I/S.W., of the National Topographic series, lying immediately to the west of the Moncton sheet; additional control in Nova Scotia; plane-table survey around Malpeque bay, Prince Edward Island; general supervision of the work of G. A. Surette; the taking of 93 observations for magnetic declination in the Maritime Provinces, including 9 repeat observations and the establishment of 8 new meridian stations.

BLANCHET, G. H.—Explorations and investigations of an exploratory nature of the region on the west coast of Hudson bay lying in general between Ferguson river and Marble island and extending westerly to Kaminuriak lake; the taking of 144 observations for magnetic declination in the Northwest Territories.

BRIDGLAND, M. P.—Supervision of photo-topographical mapping by L. E. Harris of 250 square miles of the Glacier Park two-mile sheet, No. 82-N/S.W., of the National Topographic series; survey of four Indian reserves in the Railway Belt of British Columbia; the taking of 39 observations for magnetic declination in Alberta and British Columbia, including 2 repeat observations.

REFUELING BASE AT THICKET PORTAGE, MANITOBA

The gasoline is stored in small buildings which may be readily "knocked down" after they have served their purpose. The gasoline is pumped into the tanks by a hose from the barrels in which it is brought to the cache. The seaplane shown carries a crew of two men—pilot and photographer—and attains a speed of approximately 90 miles an hour. It is used for the taking of vertical aerial photographs from an altitude over average type of country of 10,000 feet. Before this photograph was taken the plane in the view had been engaged on vertical aerial photographic operations over the Flin Flon mining area.

CALDER, J. A.—In Manitoba: subdivision in townships 42-25-W. and 43-25-W., at Rocky Lake settlement in township 59-28-W., at Ministik Beach on Madge lake in township 30-30-W., miscellaneous surveys in four other townships; in Saskatchewan: re-establishment of lost corners in township 11-29-2; in Alberta: subdivision of part of section 11, township 9-26-4 at Macleod, timber berth survey in township 49-19-5, miscellaneous surveys in seven other townships; the taking of 39 observations for magnetic declination in Manitoba, Saskatchewan, Alberta, and British Columbia, including 8 repeat observations and the establishment of 1 new meridian station.

CARROLL, JOHN—Acting as representative of the Topographical Survey and technical adviser on aerial photographic surveys over all or portions of the following map sheets of the National Topographic series: Doucet, No. 32-C/S.E.; Senneterre, No. 32-C/S.W.; Taschereau, No. 32-D/N.E.; Gracefield, No. 31-K/S.E.; Parent, No. 31-O/N.E.; Wasinipi, No. 32-F.; and also on an investigational flight to lake Mistassini; the taking of 6 observations for magnetic declination including the establishment of 1 new meridian station, and the taking of 5 sets of observations for the inclination of the magnetic needle and the horizontal component for the earth's magnetic force, all in the province of Quebec.

CHARTRAND, D. E.—Field interpretation from aerial photographs of the topography included within two two-mile sheets and portions of two other two-mile sheets of the National Topographic series, in the Georgian Bay district of Ontario.

CHRISTIE, WM.—Astronomical observations for latitude and longitude in northern Quebec and in northwestern Ontario to provide control for aerial photographs; traverse of river in section 11, township 47-19-3; under his commission as a Saskatchewan Land Surveyor, the investigation of squatters' improvements in section 34, township 52-24-3; the taking of 54 observations for magnetic declination in Quebec and Ontario.

DAVIDSON, R. D.—Acting as representative of the Topographical Survey and technical adviser on aerial photographic surveys over all or portions of the following map sheets of the National Topographic series: Quetico, No. 52-B; Rainy Lake, No. 52-C; Ignace, No. 52-G; Miminiska, No. 52-P; Nipigon, No. 52-H, in the province of Ontario; Cross Lake, No. 63-I; Nelson House, No. 63-O; Sipiwesk, No. 63-P, in the province of Manitoba; and Foster Lakes, No. 74-A; and Mudjatik, No. 74-B, in the province of Saskatchewan.

DICKSON, H. G.—The delimitation of about 40 miles of road between Mayo and Dawson in Yukon Territory as a reference line and control survey (performed under contract, Mr. Dickson not being a member of the staff).

FAWCETT, S. D.—Running 26 miles of chain traverse in the Petawawa forest experimental station, near Chalk River, Ontario, which was required as control for the production of a mosaic map of a major portion of it; the taking of 14 observations for magnetic declination in the province of Ontario and establishment of 1 new meridian station.

FLETCHER, W. A.—Survey of 700 square miles in the Roseau River basin, Manitoba, of which approximately 80 square miles were plane-tabled; the running of 1,000 miles of levels, required for an intensive study of certain problems of an international nature relating to the district; traverse of Roseau river in township 1-7-E; miscellaneous retracement surveys in township 1-6-E; the taking of 10 observations for magnetic declination in the province of Quebec; the running of control along the railway right of way from Chelsea to Wakefield, province of Quebec.

FRY, E. S.—Acting as representative of the Topographical Survey and technical adviser on aerial photographic surveys over all or portions of the following map sheets of the National Topographic series: Quetico, No. 52-B; Rainy Lake, No. 52-C; Ignace, No. 52-G; Nipigon, No. 52-H; Miminiska, No. 52-P, in the province of Ontario; Cross Lake, No. 63-I; Nelson House, No. 63-O; Sipiwesk, No. 63-P; in the province of Manitoba; and Foster Lakes, No. 74-A; and Mudjatik, No. 74-B, in the province of Saskatchewan.

GORMAN, A. O.—In Saskatchewan: completion of survey of lands reclaimed in Waterhen lake reclamation project and of right of way for drainage canal, townships 44 and 45, ranges 21 and 22, west of the Second meridian; restoration surveys in township 41-14-3; resurvey under section 58 of the D.L.S. Act of township 42, range 15, west of the Third meridian; correction survey in township 41, range 18, west of the Third meridian; miscellaneous surveys in seven other townships. In Alberta: miscellaneous surveys in township 39, range 7, west of the Fourth meridian; township 38, range 9, west of the Fourth meridian; and township 53, range 12, west of the Fourth meridian. The taking of 3 observations for magnetic declination in the province of Alberta and 13 in the province of Saskatchewan, including in the latter province 1 repeat observation and the establishment of 3 new stations.

HARRIS, L. E.—Under the general supervision of M. P. Bridgland the photo-topographical mapping of 250 square miles of the Glacier Park two-mile sheet, No. 82–N/S.W., of the National Topographic series; the taking of 4 observations for magnetic declination in the province of British Columbia.

HUNT, SEPTIMUS.—Survey of new road to steamer landing and subdivision of lot 48 and part of lots 11 and 12, at Fort Smith settlement, investigation at Fort Good Hope, survey of settlement at Arctic Red River, of lots at McPherson, and of a cemetery site at Aklavik, all in the Northwest Territories; the taking of 8 observations for magnetic declination in the Northwest Territories, including 3 repeat observations and the establishment of 2 new meridian stations.

LAMBART, H. F. J.—Survey of Indian reserves at Pukatawagan and Brochet in Manitoba and at South End, Reindeer lake, in Saskatchewan; the taking of 3 observations for magnetic declination in Saskatchewan, and 22 observations in Manitoba, including 2 repeat observations.

LEBLANC, P. M. H.—Chain control surveys for mapping from vertical aerial photographs the Lachute sheet, No. 31–G/N.E., and the Coulonge sheet, No. 31–F/N.E., of the National Topographic series; control surveys in the vicinity of St. Jerome, Quebec; the taking of 24 observations for magnetic declination in Ontario, including the establishment of 3 new meridian stations, and 61 observations in Quebec including 1 repeat observation and the establishment of 1 new meridian station.

MAGNETIC OBSERVATIONS ON THE PLAINS OF ABRAHAM

At this historic point, the surveyor is shown taking observations for the magnetic declination, inclination and total force. The nearer instrument, a Dover dip circle, is being used to determine the two last mentioned quantities. The farther instrument, a compass-theodolite, is used to measure the true direction of the magnetic needle. The first magnetic observations in this locality were made by Jacques Cartier in 1534.

LONERGAN, G. J.—Land examination to determine advisability of subdividing previously unsubdivided lands as follows: approximately 100 square miles lying southeast of Cold lake in Saskatchewan and 700 square miles in the Peace river area of Alberta; survey of historic sites at Rocky Mountain House and Shaftesbury settlement.

MACDONALD, C. S.—Stadia control surveys in northern Saskatchewan, along a part of Saskatchewan river and waterways to the north; astronomical observations for latitude and longitude on Geikie river and on Vermilion lake; the taking of 68 observations for magnetic declination in Saskatchewan including 4 repeat observations and the establishment of 3 new meridian stations.

MCCUSKER, K. F.—Subdivision of lands for settlement in townships 79, ranges 7, 8, 9 and 12; and townships 80, ranges 8, 9 and 12, all west of the Sixth meridian; the taking of 23 observations for magnetic declination in Alberta.

PIERCE, J. W.—Preliminary survey of Ontario-Manitoba boundary line from the twelfth base line of the Dominion Lands System to the most eastern point of Island lake; the taking of 21 observations for magnetic declination in Ontario and 21 in Manitoba.

PURSER, R. C.—Under commission as Ontario Land Surveyor, the survey of a historic site west of St. Thomas, Ontario; the taking of 2 observations for magnetic declination in Ontario and 3 repeat observations in Quebec.

RINFRET, C.—Mapping with the aid of aerial photographs the Grondines one-mile sheet, No. 31-I/9, of the National Topographic series; laying down some chained control and also with the aid of aerial photographs, mapping of the northwest portion of the Quebec two-mile sheet, No. 21–L/N.W. of the National Topographic series; under his commission as Quebec Land Surveyor, the survey of a historic site near Old Chelsea, Quebec; the taking of 140 observations for magnetic declination in Quebec, including 20 repeat observations and the establishment of 23 new meridian stations; the taking of 19 sets of observations in Quebec for the inclination of the magnetic needle and the horizontal component for the earth's magnetic force.

SEGRÉ, B. H.—Subdivision of lands for settlement in townships 76, ranges 1 and 13; townships 79, ranges 10 and 11; township 80, range 11; and townships 68 and 69, range 8, all west of the Sixth meridian; the taking of 8 observations for magnetic declination.

SURETTE, G. A.—Under the general supervision of G. A. Bennett, the retracement of 52 miles of control on the Shelburne and Rossignol sheets, Nos. 20–P/N.W. and 21–A/S.W., respectively; the running of 96 miles of new chained and levelled control on the Bridgewater sheet, No. 21-A/S.E.; the field interpretation from aerial photographs of the Rossignol sheet, No. 21–A/S.W., St. Mary Bay sheet, No. 21–B/S.E. and Port Mouton sheet, No. 20–P/N.E., all lying in general at the western end of the province of Nova Scotia; the taking of 25 observations for magnetic declination in Nova Scotia, including 2 repeat stations.

TAGGART, C. H.—Stadia traverse control and triangulation for the control of vertical aerial photographs over 860 square miles on the Shuswap Lake two-mile sheet, No. 82–L/N.W., of the National Topographic series; and for 30 square miles of Adams Lake two-mile sheet, No. 82–M/S.W.; the establishment of governing monuments for controlling projected development within forest reserves in connection with the above; co-operation with the Provincial Government in the survey of the Pacific Great Eastern railway block north of Prince George; the taking of 45 observations for magnetic declination in British Columbia, including 4 repeat observations and the establishment of 2 new meridian stations.

Surveyors and engineers from other branches of the department who performed work during the season in co-operation with and under technical instructions from the Topographical Survey:—

COURSIER, E. C., D.L.S.—Forest Service—running of certain quarter-section lines in township 38–29–W; summer resort subdivision at Arcola lake, Saskatchewan.

KITTO, F. H., D.L.S.—North West Territories and Yukon Branch—survey of group lots at Charlton island, James bay, Northwest Territories; the taking of 1 observation for magnetic declination in Ontario and 2 in the Northwest Territories.

SOPER, J. D.—North West Territories and Yukon Branch—the taking of 457 observations for magnetic declination in the Northwest Territories.

WALKER, C. M., D.L.S., S.L.S.—National Parks of Canada—running of certain boundary lines in Waterhen Lakes Park, Alberta; under his commission as a Saskatchewan Land Surveyor the survey of a historic site at Fish Creek, Saskatchewan.

APPENDIX II

LIST OF MAP SHEETS OF THE NATIONAL TOPOGRAPHIC SERIES AND THE SECTIONAL MAP SERIES ISSUED 1929-30, AND IN HAND MARCH 31, 1930.

ISSUED 1929-30

Prov.	No.	Series	Name	Scale	Latitude	Longitude	Remarks*
N.S.....	20-0/16	N.T....	Yarmouth.....	1	43° 45′ to 44° 00′	66° 00′ to 66° 30′	(*a*)
Ont.....	31-E/SW..	N.T....	Muskoka.....	2	45° 00′ to 45° 30′	79° 00′ to 80° 00′	(*b*)
	53-D	" ...	Deer Lake.....	4	52° 00′ to 53° 00′	94° 00′ to 96° 00′	(*b*)
Man.....	53-L	N.T....	Oxford House.....	4	54° 00′ to 55° 00′	94° 00′ to 96° 00′	(*b*)
	62-I	" ...	Selkirk.....	4	50° 00′ to 51° 00′	96° 00′ to 98° 00′	(*a*)
	62-P	" ...	Hecla.....	4	51° 00′ to 52° 00′	96° 00′ to 98° 00′	(*b*)
	63-K	" ...	Cormorant Lake..	4	54° 00′ to 55° 00′	100° 00′ to 102°00′	(*b*) reprint
	575	Sect....	Port Nelson.....	3	56° 41′ to 57° 23′	91° 53′ to 94° 01′	(*f*) reprint
	122	" ...	Manitoba House..	3	50° 24′ to 51° 08′	98° 00′ to 100° 08′	(*f*) reprint
	121	" ...	Riding Mtn.....	3	50° 24′ to 51° 08′	100° 05′ to 102° 01′	(*f*) reprint
Sask.....	63-M	N.T....	Pelican Narrows..	4	55° 00′ to 56° 00′	102° 00′ to 104° 00′	(*b*)
	73-P	" ...	Lac La Ronge.....	4	55° 00′ to 56° 00′	104° 00′ to 106° 00′	(*b*)
	220	Sect....	Nut Mountain.....	3	51° 47′ to 52° 30′	102° 00′ to 104° 01′	(*f*) reprint
	370	" ...	Cumberland.....	3	53° 53′ to 54° 36′	102° 00′ to 104° 07′	(*f*) reprint
	219	" ...	Humboldt.....	3	51° 47′ to 52° 30′	103° 58′ to 106° 01′	(*d*)
	319	" ...	Prince Albert N..	3	53° 11′ to 53° 54′	104° 02′ to 106° 01′	(*f*) reprint
	318	" ...	Big River.....	3	53° 11′ to 53° 54′	106° 00′ to 108° 05′	(*e*) reprint
	368	" ...	Green Lake.....	3	53° 53′ to 54° 36′	106° 00′ to 108° 07′	(*f*) reprint
Alta.....	74-L.	N.T....	Chipewyan.....	4	58° 00′ to 59° 00′	110° 00′ to 112° 00′	(*c*)
	84-I	" ...	Lake Claire.....	4	58° 00′ to 59° 00′	112° 00′ to 114° 00′	(*c*)
	84-P	" ...	Peace Point.....	4	59° 00′ to 60° 00′	112° 00′ to 114° 00′	(*c*)
	16	Sect....	Milk River.....	3	49° 00′ to 49° 42′	110° 00′ to 112° 02′	(*f*) reprint
	116	" ...	Rainy Hills.....	3	50° 23′ to 51° 06′	110° 00′ to 112° 05′	(*f*) reprint
	266	" ...	Wainwright.....	3	52° 29′ to 53° 12′	110° 00′ to 112° 03′	(*d*) reprint
	65	" ...	Macleod.....	3	49° 42′ to 50° 24′	112° 02′ to 114° 00′	(*d*) reprint
	265	" ...	Peace Hills.....	3	52° 29′ to 53° 12′	112° 01′ to 114° 00′	(*d*) reprint
	365	" ...	Victoria.....	3	53° 53′ to 54° 35′	112° 04′ to 114° 01′	(*d*)
	515	" ...	Wabiskaw.....	3	55° 59′ to 56° 41′	112° 01′ to 114° 01′	(*f*) reprint
	114	" ...	Calgary.....	3	50° 24′ to 51° 06′	114° 00′ to 116° 05′	(*d*) reprint
	214	" ...	Rocky Mt. House	3	51° 47′ to 52° 30′	114° 00′ to 116° 00′	(*f*) reprint
	314	" ...	St. Ann.....	3	53° 11′ to 53° 54′	114° 00′ to 116° 05′	(*f*) reprint
	564	" ...	Panny River.....	3	56° 41′ to 57° 23′	114° 00′ to 116° 07′	(*f*) reprint
	263	" ...	Jasper.....	3	52° 29′ to 53° 12′	116° 00′ to 118° 01′	(*f*) reprint
B.C.....	112.....	Sect....	Sicamous.....	3	50° 21′ to 51° 06′	118° 00′ to 120° 03′	(*f*) reprint
	10	" ...	Port Moody.....	3	49° 00′ to 49° 43′	122° 01′ to 124° 00′	(*f*) reprint

IN HAND MARCH 31, 1930

N.S.....	20-P/NE	N.T....	Port Mouton.....	2	43° 30′ to 44° 00′	64° 00′ to 65° 00′	
	21-A/SE	" ...	Bridgewater.....	2	44° 00′ to 44° 30′	64° 00′ to 65° 00′	
	20-P/NW	" ...	Shelburne.....	2	43° 30′ to 44° 00′	65° 00′ to 66° 00′	
	21-A/SW	" ...	Rossignol.....	2	44° 00′ to 44° 30′	65° 00′ to 66° 00′	
	21-B/SE	" ...	St. Mary Bay.....	2	44° 00′ to 44° 30′	66° 00′ to 67° 00′	
N.B.....	21-I/SE	N.T....	Moncton.....	2	46° 00′ to 46° 30′	64° 00′ to 65° 00′	
	21-I/SW	" ...	Chipman.....	2	46° 00′ to 46° 30′	65° 00′ to 66° 00′	
	21-I/NW	" ...	Newcastle.....	2	46° 30′ to 47° 00′	65° 00′ to 66° 00′	
Que.....	21-M/SE	N.T....	Beaupré.....	2	47° 00′ to 47° 30′	70° 00′ to 71° 00′	
	21-L/NW	" ...	Quebec.....	2	46° 30′ to 47° 00′	71° 00′ to 72° 00′	
	31-I/9	" ...	Grondines.....	1	46° 30′ to 46° 45′	72° 00′ to 72° 30′	
	31-I/NE	" ...	Grand-Mere.....	2	46° 30′ to 47° 00′	72° 00′ to 73° 00′	
	31-P/SE	" ...	La Tuque.....	2	47° 00′ to 47° 30′	72° 00′ to 73° 00′	
	31-I/SW	" ...	Rawden.....	2	46° 00′ to 46° 30′	73° 00′ to 74° 00′	
	31-G/NE	" ...	Lachute.....	2	45° 30′ to 46° 00′	74° 00′ to 75° 00′	
	31-O/SE	" ...	Kempt Lake.....	2	47° 00′ to 47° 30′	74° 00′ to 75° 00′	
	31-O/NE	" ...	Parent.....	2	47° 30′ to 48° 00′	74° 00′ to 75° 00′	
	31-G/NW.	" ...	Buckingham.....	2	45° 30′ to 46° 00′	75° 00′ to 76° 00′	

*For explanation see "Notes" at the end of this appendix.

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Prov.	No.	Series	Name	Scale	Latitude	Longitude	Remarks
Que.....	31–O/SW	N.T....	Petawaga.....	2	47° 00′ to 47° 30′	75° 00′ to 76° 00′	
	31–F/NE..	" ...	Coulonge.....	2	45° 30′ to 46° 00′	76° 00′ to 77° 00′	
	31–K/SE..	" ...	Gracefield.....	2	46° 00′ to 46° 30′	76° 00′ to 77° 00′	
	32–C/SE...	" ...	Doucet.....	2	48° 00′ to 48° 30′	76° 00′ to 77° 00′	
	32–F	" ...	Waswanipi.....	4	49° 00′ to 50° 00′	76° 00′ to 78° 00′	
	32–C/SW..	" ...	Senneterre.....	2	48° 00′ to 48° 30′	77° 00′ to 78° 00′	
	32–D/NE..	" ...	Taschereau.....	2	48° 30′ to 49° 00′	78° 00′ to 79° 00′	
	32–D/NW	" ...	Abitibi.....	2	48° 30′ to 49° 00′	79° 00′ to 80° 00′	
Ont.....	31–E/NE	N.T....	Algonquin.....	2	45° 30′ to 46° 00′	78° 00′ to 79° 00′	
	31–E/NW	" ...	Sundridge.....	2	45° 30′ to 46° 00′	79° 00′ to 80° 00′	
	31–L/SW	" ...	North Bay.....	2	46° 00′ to 46° 30′	79° 00′ to 80° 00′	
	41–H/SE	" ...	Parry Sound.....	2	45° 00′ to 45° 30′	80° 00′ to 81° 00′	
	41–H/NE	" ...	Byng Inlet.....	2	45° 30′ to 46° 00′	80° 00′ to 81° 00′	
	52–P	" ...	Mimimiska.....	4	51° 00′ to 52° 00′	88° 00′ to 90° 00′	
	52–B	" ...	Quetico.....	4	48° 00′ to 49° 00′	90° 00′ to 92′ 00′	
	52–G	" ...	Ignace.....	4	49° 00′ to 50° 00′	90° 00′ to 92° 00′	
	52–C	" ...	Rainy Lake.....	4	48° 00′ to 49° 00′	92° 00′ to 94° 00′	
	52–F	" ...	Dryden.....	4	49° 00′ to 50° 00′	92° 00′ to 94° 00′	
	52–K/SE	" ...	Hudson.....	2	50° 00′ to 50° 30′	92° 00′ to 93° 00′	
	52–D	" ...	Rainy River.....	4	48° 00′ to 49° 00′	94° 00′ to 96° 00′	
Man.....	62–H	N.T....	Winnipeg.....	4	49° 00′ to 50° 00′	96° 00′ to 98° 00′	*(a)*
	63–I	" ...	Cross Lake.....	4	54° 00′ to 55° 00′	96° 00′ to 98° 00′	
	63–P	" ...	Sipiwesk.....	4	55° 00′ to 56° 00′	96° 00′ to 98° 00′	
	63–B	" ...	Waterhen.....	4	52° 00′ to 53° 00′	98° 00′ to 100° 00′	
	64–C	" ...	Granville Lake...	4	56° 00′ to 57° 00′	100° 00′ to 102° 00′	
Sask.....	64–D	N.T....	Reindeer Lake South.....	4	56° 00′ to 57° 00′	102′ 00° to 104° 00′	
	73–H	" ...	Prince Albert.....	4	53° 00′ to 54° 00′	104° 00′ to 106° 00′	
	74–A	" ...	Foster Lakes.....	4	56° 00′ to 57° 00′	104° 00′ to 106° 00′	
	73–O	" ...	Ile-a-la-Crosse....	4	55° 00′ to 56° 00′	106° 00′ to 108° 00′	
	74–B	" ...	Mudjatik.....	4	56° 00′ to 57° 00′	106° 00′ to 108° 00′	
	19	Sect....	Willowbunch.....	3	49° 00′ to 49° 42′	104° 00′ to 106° 00′	*(e)*
	18	" ...	Wood Mountain...	3	49° 00′ to 49° 42′	106° 00′ to 108° 02′	*(e)*
	217	" ...	Tramping Lake...	3	51° 47′ to 52° 30′	108° 00′ to 110° 00′	*(f)*
	117	" ...	Red Deer Forks..	3	50° 23′ to 51° 06′	108° 03′ to 110° 00′	*(e)*
	167	" ...	Kindersley.....	3	51° 05′ to 51° 48′	108° 05′ to 110° 00′	*(e)*
Alta.....	74–M	N.T....	Fitzgerald.....	4	59° 00′ to 60° 00′	110° 00′ to 112° 00′	
	82–I/13	" ...	Calgary S.E.....	1	50° 45′ to 51° 00′	113° 30′ to 114° 00′	
	82–J/16	" ...	Calgary S.W.....	1	50° 45′ to 51° 00′	114° 00′ to 114° 30′	
	82–O/1	" ...	Calgary N.W.....	1	51° 00′ to 51° 15′	114° 00′ to 114° 30′	
	82–N/NE	" ...	Mistaya.....	2	51° 30′ to 52° 00′	116° 00′ to 117° 00′	
	116	Sect....	Rainy Hills.....	3	50° 23′ to 51° 06′	110° 00′ to 112° 05′	*(e)*
	166	" ...	Sounding Creek...	3	51° 06′ to 51° 48′	110° 00′ to 112° 07′	*(e)*
	364	" ...	Ft. Assiniboine...	3	53° 53′ to 54° 36′	114° 00′ to 116° 07′	*(e)*
B.C.....	82–N/SE	N.T....	Yoho.....	2	51° 00′ to 51° 30′	116° 00′ to 117° 00′	
	82–N/SW	" ...	Glacier Park.....	2	51° 00′ to 51° 30′	117° 00′ to 118° 00′	
	82–L/NE	" ...	Revelstoke.....	2	50° 30′ to 51° 00′	118° 00′ to 119° 00′	
	82–L/NW	" ...	Shuswap Lake....	2	50° 30′ to 51° 00′	119° 00′ to 120° 00′	
	92–I/SE	" ...	Merritt.....	2	50° 00′ to 50° 30′	120° 00′ to 121° 00′	

NOTES:—Work performed on those sheets marked "In Hand" ranges throughout the various stages from the commencement of the field work (where required) to the preparation of the final lithographic plates for printing. In the above list, however, some sheets upon which very little work has so far been done are not included.

Where a map sheet extends into more than one province, it is listed under one province only.

Under the column of "Remarks" the following are the meanings attached to the symbols used:

(a) National Topographic Series—Standard Edition—Topographical information complete.

(b) National Topographic Series—Provisional Edition—Topographical information complete or nearly so (except for contours), over all or greater portion of sheet.

(c) National Topographic Series—Exploratory Edition—Topographical information from exploration surveys, no contours or contours conjectural only.

(d) Sectional Map Series—New Series Edition—Detailed topographical information in eight colours, including contours.

(e) Sectional Map Series—Intermediate Series Edition—Topographical information in five colours, not so complete. Contours, when shown, usually approximate only.

(f) Sectional Map Series—Old Series Edition—General topography only, in from one to four colours.

APPENDIX No. III

LIST OF MISCELLANEOUS MAP SHEETS ISSUED 1929–30 AND IN HAND MARCH 31, 1930

NOTE.—A number of miscellaneous map sheets issued as indexes and for various other purposes in connection with the work of the organization are not included.

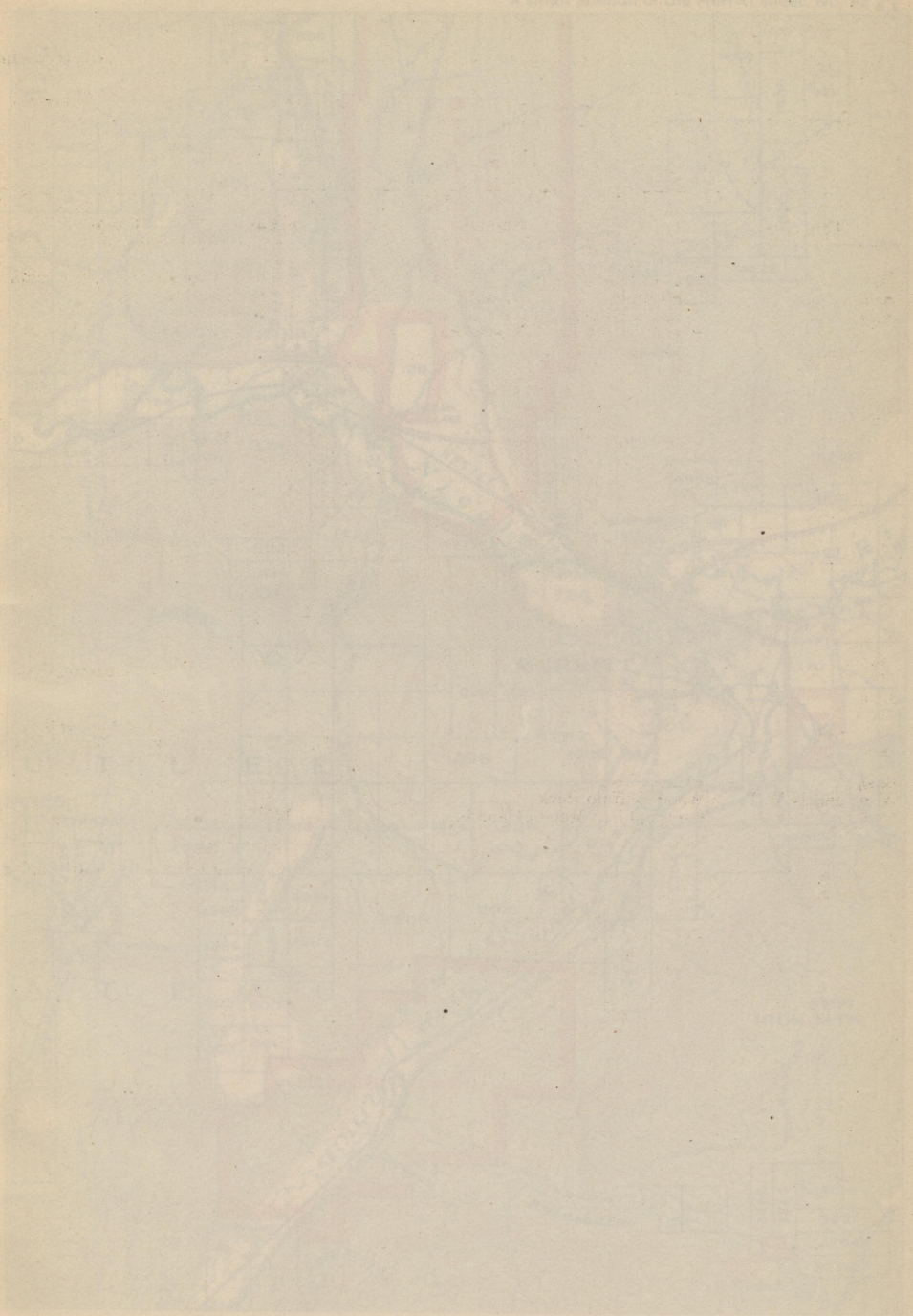
ISSUED 1929–30

Province	Map	Scale	Remarks
Ont.	Ottawa sheet	2	Ottawa to Kingston map.
Sask.	Fond-du-lac	6	Reprint.
Alta.	Calgary District	3	"
"	Peace River Land Classification	6	"
Alta. and B.C.	Alberta-British Columbia Bdy	1	
"	Waterhen Lakes Park	1	
"	Rocky Mountains Park	3	Reprint.
B.C.	Yoho Park	2	Revised.
"	Glacier Park	2	"
N.W.T.	McMurray to Chipewyan	4	Reprint.
"	Simpson to Wrigley	4	"
"	Wrigley to Norman	4	"
"	Norman to Hume River	4	"
"	Hume River to Thunder River	4	"

IN HAND MARCH 31, 1930

P.E.I.	Malpeque Bay Oyster Leases	1	8 sheets.
Que.	Ottawa-Gatineau	1	
Ont.	Kingston sheet	2	Ottawa to Kingston map.
Ont.	Sudbury District	2	
Sask.	Saskatchewan South	12·5	
Man. and Sask.	Winnipeg to Regina	8	Aerial navigation map.
Sask. and Alta.	Medicine Hat, N.M. 12	15·78	International Map of World, 1/1,000,000.
Sask.	Prince Albert Park	3	
Alta. and N.W.T.	Wood Buffalo Park	8	
Canada	Orographical Map of Canada	125	

NOTE.—With regard to those sheets marked "In Hand" see first paragraph of "Notes" under Appendix II.



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LIST OF MISCELLANEOUS MAP SHEETS ISSUED 1929-30 AND IN HAND MARCH 31, 1930

NOTE.—A number of miscellaneous map sheets issued as indexes and for various other purposes in connection with the work of the organization are not included.

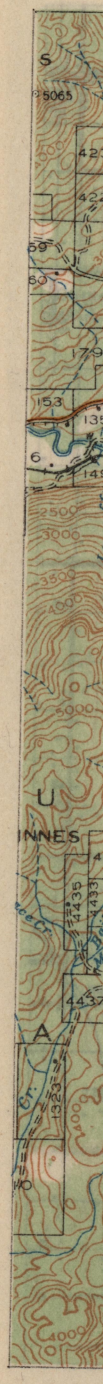
ISSUED 1929-30

Province	Map	Scale	Remarks
Ont.	Ottawa sheet	1	Ottawa to Kingston map.
Sask.	Pond du Lac	4	Revised.
Alta.	Calgary District	1	
"	Peace River Land Classification	1	
Alta. and B.C.	Alberta-British Columbia Bdy.	1	
"	Waterton Lakes Park	1	
"	Rocky Mountains Park	1	Reprint.
B.C.	Yoho Park	1	Revised.
"	Glacier Park	1	
N.W.T.	McMurray to Chipewyan	4	Reprint.
"	Simpson to Wrigley	4	"
"	Wrigley to Norman	4	"
"	Norman to Horse River	4	"
"	Hume River to Thunder River	4	"

IN HAND MARCH 31, 1930

P.E.I.	Malpeque Bay Oyster Leases	1	8 sheets.
Ont.	Ottawa sheet	1	Ottawa to Kingston map.
Sask.	Reindeer District	4	
Sask.	Churchill-Nelson Rivers	12.5	
Alta. and Sask.	Waterton to Shaunavon	1	Aerial navigation map.
Sask. and Man.	Boundary Bet. N.W.T. &	12.16	International Map of World.
Sask.	Prince Albert Park	1	
Alta. and B.C.	Rocky Mountains Park	1	
Canada	Photographic Map of Canada	250	

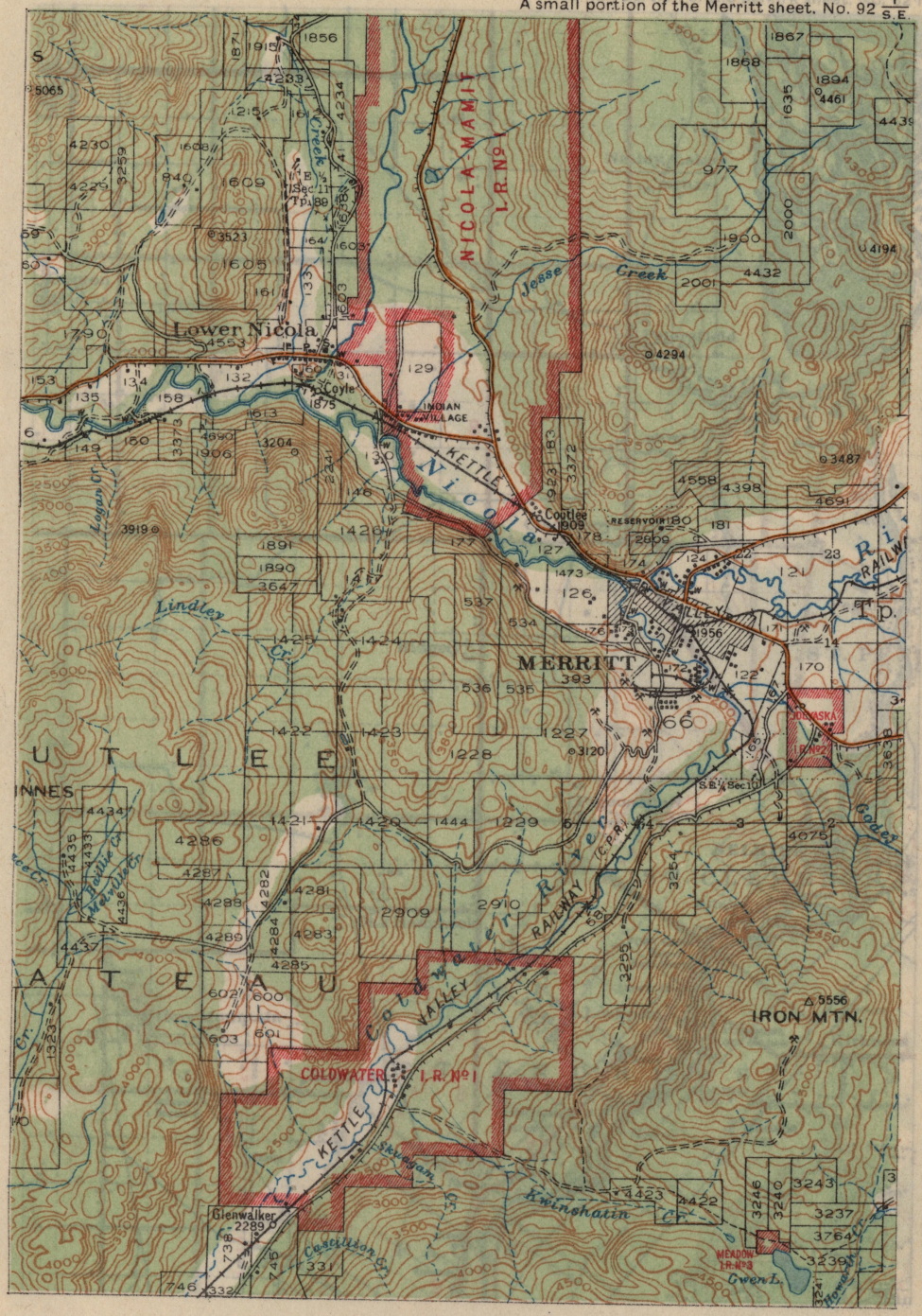
NOTE.—With regard to those sheets marked "In Hand" see list "Photographic Maps" under Appendix II.



DEPARTMENT OF THE INTERIOR

TOPOGRAPHICAL SURVEY

A small portion of the Merritt sheet. No. 92 $\frac{I}{S.E.}$



NATIONAL TOPOGRAPHIC SERIES

Scale 2 miles to 1 inch

Contour interval 100 feet

DEPARTMENT OF THE INTERIOR

TOPOGRAPHICAL SURVEY

A small portion of the Selkirk sheet, No. 82-I

NATIONAL TOPOGRAPHIC SERIES

Scale 4 miles to 1 inch

Contour interval 25 feet

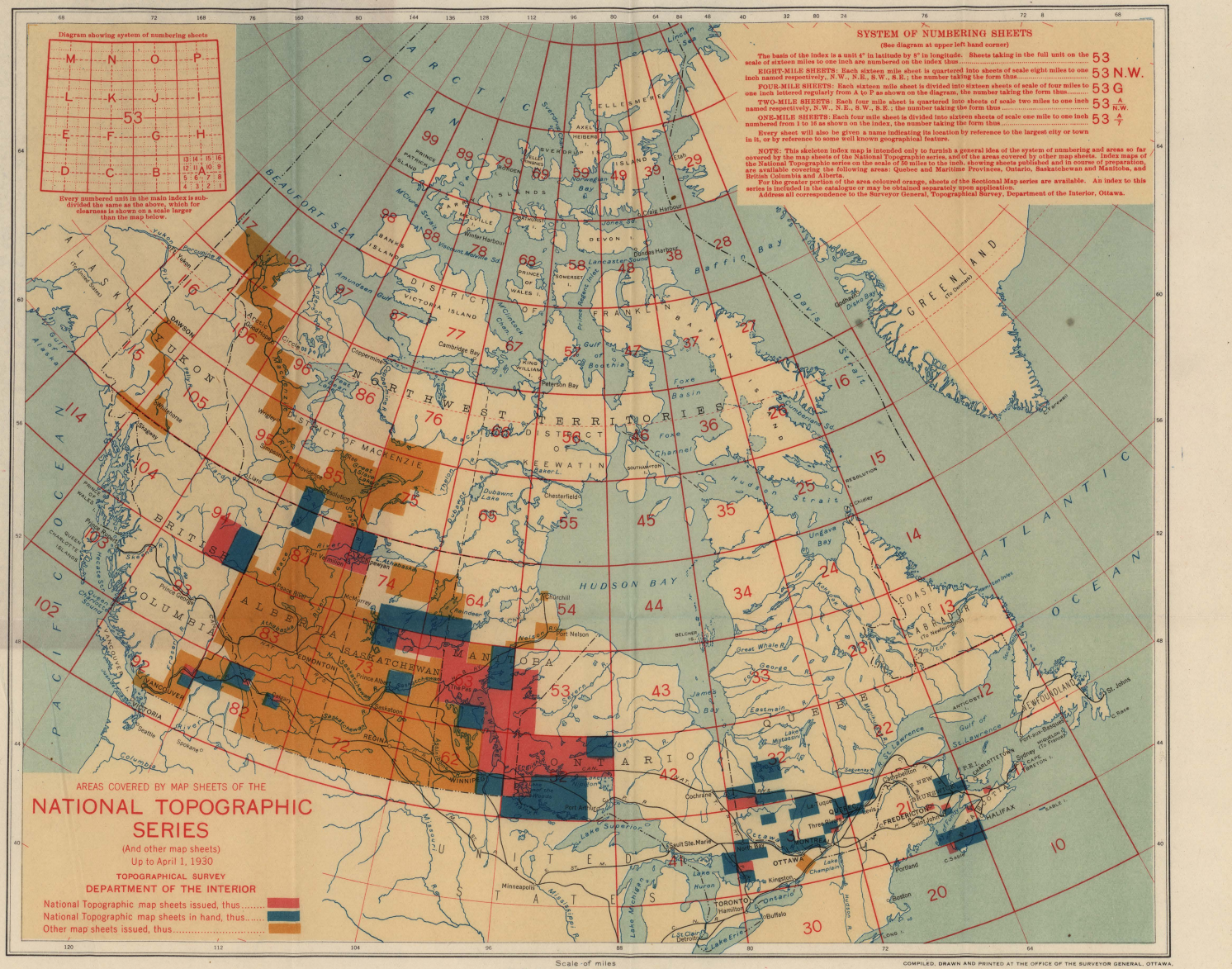


Diagram showing system of numbering sheets
M N O P
L K J I
53
E F G H
13 14 15 16
12 11 10 9
5 6 7 8
4 3 2 1
D C B A
Every numbered unit in the main index is subdivided the same as the above, which for clearness is shown on a scale larger than the map below.
SYSTEM OF NUMBERING SHEETS
(See diagram at upper left hand corner)
The basis of the index is a unit 4° in latitude by 8° in longitude. Sheets taking in the full unit on the scale of sixteen miles to one inch are numbered on the index thus 53
EIGHT-MILE SHEETS: Each sixteen mile sheet is quartered into sheets of scale eight miles to one inch named respectively, N.W., N.E., S.W., S.E.; the number taking the form thus 53 N.W.
FOUR-MILE SHEETS: Each sixteen mile sheet is divided into sixteen sheets of scale of four miles to one inch lettered regularly from A to P as shown on the diagram, the number taking the form thus 53 G
TWO-MILE SHEETS: Each four mile sheet is quartered into sheets of scale two miles to one inch named respectively, N.W., N.E., S.W., S.E.; the number taking the form thus 53 A N.W.
ONE-MILE SHEETS: Each four mile sheet is divided into sixteen sheets of scale one mile to one inch numbered from 1 to 16 as shown on the index, the number taking the form thus 53 A 7
Every sheet will also be given a name indicating its location by reference to the largest city or town in it, or by reference to some well known geographical feature.
NOTE: This skeleton index map is intended only to furnish a general idea of the system of numbering and areas so far covered by the map sheets of the National Topographic series, and of the areas covered by other map sheets. Index maps of the National Topographic series on the scale of 16 miles to the inch, showing sheets published and in course of preparation, are available covering the following areas: Quebec and Maritime Provinces, Ontario, Saskatchewan and Manitoba, and British Columbia and Alberta.
For the greater portion of the area coloured orange, sheets of the Sectional Map series are available. An index to this series is included in the catalogue or may be obtained separately upon application.
Address all correspondence to the Surveyor General, Topographical Survey, Department of the Interior, Ottawa.
AREAS COVERED BY MAP SHEETS OF THE
NATIONAL TOPOGRAPHIC SERIES
(And other map sheets)
Up to April 1, 1930
TOPOGRAPHICAL SURVEY
DEPARTMENT OF THE INTERIOR
National Topographic map sheets issued, thus
National Topographic map sheets in hand, thus
Other map sheets issued, thus
ARCTIC OCEAN
BEAUFORT SEA
BAFFIN BAY
DAVIS STRAIT
GREENLAND
HUDSON BAY
HUDSON STRAIT
ATLANTIC OCEAN
PACIFIC OCEAN
ALASKA
YUKON
DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES
DISTRICT OF FRANKLIN
KEEWATIN
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
NEWFOUNDLAND
PRINCE EDWARD ISLAND
NOVA SCOTIA
NEW BRUNSWICK
ELLESMERE ISLAND
AXEL HEIBERG I.
SVERDRUP ISLANDS
PRINCE PATRICK I.
MELVILLE I.
BANKS ISLAND
VICTORIA ISLAND
DEVON I.
SOMERSET I.
PRINCE OF WALES I.
KING WILLIAM I.
BAFFIN I.
SOUTHAMPTON I.
COATS I.
MANSEL I.
RESOLUTION I.
AKPATOK I.
BELCHER IS.
QUEEN CHARLOTTE ISLANDS
VANCOUVER I.
ANTICOSTI I.
CAPE BRETON I.
SABLE I.
Yukon R.
Mackenzie R.
Great Slave L.
Great Bear L.
Athabasca R.
Peace R.
Fraser R.
Columbia R.
Saskatchewan R.
Nelson R.
Churchill R.
Winnipeg R.
Red R.
Great Whale R.
George R.
Eastmain R.
Moose R.
Abitibi R.
Ottawa R.
St. Lawrence R.
Gulf of St. Lawrence
Lake Superior
Lake Huron
Lake Michigan
Lake Erie
Lake Ontario
Lake Champlain
Lake Winnipeg
Lake Athabasca
Lake Winnipegosis
Lake Manitoba
Lake Nipigon
Lake Abitibi
Lake Mistassini
Lake St. John
Gaspe Basin
Ungava Bay
James Bay
Foxe Basin
Foxe Channel
Gulf of Boothia
Amundsen Gulf
Prince Regent Inlet
Lancaster Sound
Queen Maud Gulf
Dease Strait
Coronation Gulf
Dolphin and Union Strait
Victoria Strait
Franklin Strait
Peel Sound
Wellington Channel
Jones Sd.
Norwegian Bay
Eureka
Craig Harbour
Dundas Harbour
Cape Dorset
Port Burwell
Godthaab
Disko Bay
Upernavik
Thule
Cambridge Bay
Gjoa Haven
Coppermine
Arctic Red River
Aklavik
Herschel I.
Circle
Dawson
Whitehorse
Carcross
Atlin
Telegraph Creek
Wrangell
Juneau
Ketchikan
Prince Rupert
Port Simpson
Hazelton
Quesnel
Prince George
Fort St. James
Fort Fraser
Fort McLeod
Fort St. John
Dawson Creek
Fort Nelson
Fort Simpson
Fort Wrigley
Fort Norman
Fort Resolution
Fort Smith
Fort Providence
Fort Rae
Fort Reliance
Chesterfield
Baker L.
Dubawnt Lake
Southampton
Coral Harbour
Repulse Bay
Wager Bay
Chantrey Inlet
Pelly Bay
Rankin Inlet
Whale River
Port Harrison
Great Whale R.
Povungnituk
Cape Wolstenholme
Lake Mistassini
Roberval
Chicoutimi
Quebec
Three Rivers
Montreal
Ottawa
Kingston
Toronto
Hamilton
Buffalo
Detroit
St. Clair
Sault Ste. Marie
Port Arthur
Cochrane
Timmins
Kirkland Lake
North Bay
Sudbury
Parry Sound
Owen Sound
Port Arthur
Fort William
Winnipeg
Brandon
Regina
Moose Jaw
Saskatoon
Prince Albert
Battleford
Edmonton
Calgary
Medicine Hat
Lethbridge
Banff
Jasper
Kamloops
Nelson
Trail
Penticton
Vernon
Prince Rupert
Victoria
Vancouver
Seattle
Spokane
Minneapolis
Milwaukee
Chicago
Boston
Portland
Long I.
Saint John
Fredericton
Halifax
Sydney
Charlottetown
Port aux Basques
Cape Ray
St. John's
Labrador
Newfoundland
Scale of miles
100 50 0 100 200 300 400
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